

CLAIMS

Sub 1. Biodegradable heterophase compositions comprising partially or completely destructured and/or complexed starch, a polysaccharide ester, and a plasticizer for the polysaccharide ester, in which the polysaccharide ester constitutes the matrix and the starch the dispersed phase, characterised in that the compositions comprise starch and plasticised polysaccharide ester in a ratio by weight of from 1:0.6 to 1:18, the polysaccharide ester is plasticised with a plasticizer in a quantity of from 10 to 40% by weight referred to the polysaccharide ester and the starch is in the form of particles or domains of numeric mean dimension lower than 1 μm for at least 80% of the particles, the compositions comprising an additive which can increase and maintain at values of 4 or more the pH of a solution obtained by placing the compositions in pellet or particle form in contact with water at ambient temperature for 1 hour with the use of a pellet/particles:water ratio of 1:10 by weight.

2. Biodegradable compositions according to Claim 1, in which the polysaccharide ester is a cellulose or a starch ester.

Sub B1 3. Biodegradable compositions according to Claim 1 or 2, in which the particles or domains of the dispersed phase have dimension lower than 0.5 μm .

4. Biodegradable compositions according to any preceding Claim, in which the pH regulating additive is selected from carbonates and hydroxides of alkaline-earth metals.

5. Biodegradable compositions according to Claim 4, in which the pH regulating additive is selected from calcium and magnesium carbonates.

Sub B2 6. Biodegradable compositions according to any one of Claims 1 to 5, in which the polysaccharide ester is a cellulose acetate with a degree of substitution of from 1.5 to 2.5.

7. Biodegradable compositions according to any one of Claims 1 to 6, in which the pH regulating additive is present in a quantity of from 0.5 to 30% by weight relative to the weight of the starch and of the plasticised cellulose ester.

8. Biodegradable compositions according to Claim 7, in which the pH regulating additive is present in a quantity of from 5 to 20%.

Sub B3 9. Biodegradable compositions according to any one of Claims 1 to 8, comprising a further polymeric additive selected from the group consisting of:

- polymers or copolymers compatible with the polysaccharide ester, grafted with aliphatic or polyhydroxylated chains containing from 4 to 40 carbon atoms,

- copolymers obtained from hydroxy-acids and diamines with 2-24 carbon atoms, aliphatic polyesters, polyamides, polyureas and polyalkylene glycols with aliphatic or aromatic diisocyanates,

- copolymers produced from polymers compatible with the polysaccharide esters by grafting polyols soluble in starch.

10. Biodegradable compositions according to Claim 9, in which said further polymeric additive is used in a quantity of from 0.1 to 20% by weight relative to the weight of the starch and of the plasticised cellulose ester.

Sub B4 11. Biodegradable compositions according to any one of Claims 1 to 8, in which the further polymeric additive is se-

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selected from the group consisting of a polymer or copolymer compatible with the cellulose ester grafted with a fatty acid selected from oleic, lauric, palmitic, stearic, erucic, linoleic and ricinoleic acids and a block copolymer between polycaprolactone and an aliphatic or aromatic diisocyanate.

12. Biodegradable compositions according to any one of Claims 1 to 11, comprising a plasticizer for the starch phase, used in a quantity of from 0.5 to 50% relative to the weight of the starch.

13. Biodegradable compositions according to any one of Claims 1 to 12, in which the ratio of plasticised cellulose-ester:starch is between 2:1 and 3:1 by weight.

14. Manufactured articles produced from the compositions of Claims 1 to 13.

15. Manufactured articles according to Claim 14, suitable for the production of foams, foamed extruded containers, foamed extruded sheets, moulded foams.

16. Use, in a biodegradable heterophase composition comprising partially or completely destructured and/or complexed starch, a polysaccharide ester, and a plasticizer for the polysaccharide ester, in which the polysaccharide ester constitutes the matrix and the starch the dispersed phase in the form of particles or domains having an average numeral size lower than 1 μm for at least 80% of the particles, of an additive which can increase and maintain at values of 4 or more the pH of a solution obtained by placing said composition in pellet or particle form in contact with water at ambient temperature for 1 hour, in a pellet (or particle)/water ratio of 1:10 by weight, to increase the biodegradability of articles produced from said compositions.

17. A method for increasing the biodegradability of articles produced from biodegradable heterophase compositions comprising partially or completely destructured and/or complexed starch, a polysaccharide ester and a plasticizer for the polysaccharide ester, in which the polysaccharide ester constitutes the matrix and the starch the dispersed phase, in form of particles or domains having an average numeral size lower than 1 μm for at least 80% of the particles, comprising adding to said composition an additive which can increase and maintain at values of 4 or more the pH of a solution obtained by placing the compositions in pellet or particle form in contact with water at ambient temperature for 1 hour with a pellet (or particle)/water ratio of 1:10 by weight.

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